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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/816,051

03/31/2004

Sundar Vedula

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10/01/2007

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EXAMINER

HUBER, JEREMIAH C

ART UNIT

PAPER NUMBER

2621

MAIL DATE

DELIVERY MODE

10/01/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/816,051	<b>Applicant(s)</b> VEDULA ET AL.	
	<b>Examiner</b> Jeremiah C. Huber	<b>Art Unit</b> 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/21/2006</u> | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION**

***Specification***

1. The abstract of the disclosure is objected to because it contains the paragraph heading [0046] which should be removed. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 12-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims recite a computer readable medium that provides instructions that perform the claimed method when executed on a processor. The claims do not recite a computer readable medium storing a computer program that, when executed, cause a computer to perform steps, and are thus non-statutory see MPEP 2106.01.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 6, 12-15, 17, 20-23 and 26-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Carlbom (20030033318).

In regard to claim 1 Carlbom discloses a motion estimation method wherein pixels are matched between a first and second frame (Carlbom pars. 91-93). Carlbom further discloses that the search range can be constrained to different sizes based on the expected motion or degree of 'semantic' accuracy of the pixels in order to increase computation speed or achieve 'efficient coding' (Carlbom pars. 92-93).

In regard to claim 2 refer to the statements made in claim 1 above. Carlbom further teaches constraining a search in one frame with respect to an epipolar line associated with the pixels in another frame (Carlbom par. 92).

In regard to claim 3 refer to the statements made in claim 1 above Carlbom further teaches that pixels in the first frame represent a region, or block (Carlbom par. 91).

In regard to claim 4 refer to the statements made in claim 2 above Carlbom further teaches computing the epipolar line in the second frame (Carlbom par. 92).

In regard to claim 6 refer to the statements made in claim 2 above Carlbom further teaches use of an expected position or initial seed (Carlbom par. 92).

In regard to claims 12-15, 17, 20-23 and 26-30 refer to the statements made in claims 1-4 and 6 above.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlbom in view of Guo et al (6353678).

In regard to claims 5 and 16, Carlbom discloses a motion estimation method as described in claims 4 and 15 above. It is noted that Carlbom does not disclose details pertaining to the computation of the epipolar line. However, use of a fundamental matrix to calculate epipolar lines was common and notoriously well known in the art at the time of the invention as is shown by Guo (Guo col. 8 line 55 to col. 9 line 15). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage utilizing a fundamental matrix in calculating epipolar lines as taught by Guo in the invention of Carlbom in order to calculate three dimensional geometries using few correspondence points.

5. Claims 7, 18, and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlbom in view of Steffens et al (6301370).

In regard to claims 7, 18 and 24 Carlbom discloses a motion estimation method using an expected position as described in claims 6, 17 and 23 above. It is noted that Carlbom does not disclose details of a disparity vector. However, Steffens discloses a

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disparity vector that represents the expected displacement or position of a target between frames (Steffens col. 10 line 62 to col. 11 line 12). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of utilizing a disparity vector as taught by Steffens to determine the expected position of Carlhom in order to predict movement of an object in a future frame.

6. Claims 8-11, 19, 25, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlhom in view of Newman et al (6154600).

In regard to claims 8-11, 19, 25 and 31 Carlhom discloses a motion estimation method using an expected position as described in claims 1, 12, 20 and 26 above. Carlhom further discloses dynamically updating parameters during operation (Carlhom par. 91). It is noted that Carlhom does not disclose specifics of user input. However Newman discloses a video editing system in which a user can input parameters through a slider in a user interface (Newman col. 14 lines 59-64). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including user input through a slider window in a user interface as taught by Newman in the invention of Carlhom in order to allow closer user control over the process.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah C. Huber whose telephone number is (571)272-5248. The examiner can normally be reached on Mon-Fri 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremiah C Huber  
Examiner  
Art Unit 2621

  
MEHRDAD DASTOURI  
SUPERVISORY PATENT EXAMINER  
TC 2600